Census 2006 Quick Stats Task Teacher Notes
Balance Method

Year level 7 - 9

Topics: Mathematics, percentages
Social Studies, understanding and comparing my community

The lesson is designed to be given in two parts.

Lesson 1.
Tasks 1 and 2 are intended to be completed in one lesson. The tasks build on and develop the students' understanding of percentages. Tasks 1 and 2 also serve as an introduction to the format of the statistical information students will find when they investigate 2006 Census QuickStats for their region in Task 3.

In Task 2, teachers can choose from two methods for calculating an unknown whole value when both the percentage and part of the whole are known. It is not intended that both methods be presented to your students. Rather, the first method "Backtracking with Guess and Check" is more suitable for junior secondary students while the second "Balance" method is intended for students with more developed algebraic understanding.

Lesson 2.
Task 3 has been designed to either follow Tasks 1 and 2 or to be delivered as a separate lesson. While it can be used as it is, teachers might prefer to use it as a framework that can be expanded depending on the focus of the lesson.

The Education Unit at the Australian Bureau of Statistics is always looking for feedback on its classroom activities as well as new lessons that can be shared with other teachers. If you adapt an ABS lesson, are inspired to create one of your own or have an existing lesson that you would like to share please contact Education Services

Teacher Notes and Solutions

Census 2006 Quick Stats Task

In this activity you will visit the Australian Bureau of Statistics website then download interpret statistical information about your local area that has been summarised from the 2006 Census.

You will notice that in each category the corresponding information is also given for the whole of Australia. You will be able to compare your community with the statistics for the whole of Australia.

Task 1: Calculating percentages

Most of the data for both your selected region and for Australia is shown as a raw figure and as a percentage so you can compare your area with Australia as a whole.

Consider the following sample of Person Characteristics then answer the questions below:

	Selected region	%persons in region	Australia	% persons in Australia
Total persons	2,131		19,855,288	
Males	1,025	48.1%	9,799,252	49.4%
females	1,106	51.9%	10,056,036	50.6%
Occupied private dwellings	826		7,596,183	
Separate house	737	89.2%	5,685,387	74.8%
Semi-detached, row or terrace house etc	16	1.9%	702,550	9.2%
Flat, unit or apartment	65	7.9%	1,076,315	14.2%
Other dwellings	8	1.0%	127,337	1.7%
Not stated	0	0.0%	4,594	0.1%

TABLE 1: Sex and housing snapshot

Teacher Notes and Solutions

1. Complete the following table using the given values above.

	part	whole	fraction	Decimal (out of 1)	Percentage (out of 100) 2 decimal places
Males in the region	1025	2131	$\frac{1025}{2131}$	1025 ÷2131 = 0.48099	0.4809 ×100 = 48.10%
Males in Australia	9,799,252	19,855,288	$\frac{9,799,252}{19,855,288}$	9,799,252 ÷19,855,288 = 0.4935	0.4935 × 100 = 49.35%
Females in the region	1,106	*2,131*	$\frac{1,106}{2131}$	*1,106 ÷ 2,131* *=0.5190*	*0.5190 ×100* *= 51.9%*
Semi-detached, row or terrace house etc in the region	*16*	826	$\frac{16}{826}$	*16 ÷ 826* *=0.01937*	*0.01937 ×100* *= 1.94%*
Semi-detached, row or terrace house etc in Australia	*702,550*	*7,596,183*	$\frac{702,550}{7,596,183}$	*702,550 ÷ 7,596,183* *=0.0924*	*0.0924×100* *= 9.24%*

Copy of TABLE 1: Sex and housing snapshot

2. Check that your percentage values are the same as in the first table
Answers should be the same.

3. Show how to calculate that Separate house category in the **Table 1** represents 89.2% of the population in the selected region.
737 ÷ 826 ×100 =89.2%

Task 2: Using a percentage to calculate a total

In the following data we are told the percentages of occupations from the total employed persons over 15. However we are not told what that total is.
We can calculate the total by starting with the method for calculating % from a fraction

$$\% = \frac{\text{part}}{\text{whole}} \times 100 \quad \text{or} \quad \% = \text{part} \div \text{whole} \times 100$$

Occupation	Selected Region (part)	% of employed persons over 15	Australia	% of employed persons over 15
Community and Personal Service Workers	129	16.1%	801,906	8.8%
Sales Workers	75	9.4%	896,208	9.8%
Professionals	102	12.8	1,806,010	19.8%

TABLE 2: Occupation snapshot

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The Balance Method –
complete the same operation on both sides of the equals sign

Let ***x*** be the whole number we are looking for

9.4 = 75 ÷ *x* × 100 [divide both sides by 100]

9.4 ÷ 100 = 75 ÷ *x* × 100 ÷ 100

0.094 =75 ÷ *x* [multiply both sides by *x*]

0.094 × *x* = 75 ÷ *x* × *x*

0.094 *x* = 75 [divide both sides by 0.094]

0.094 *x* ÷ 0.094 = 75 ÷ 0.094

***x* = 797.87**

4. Explain how many decimal places would be required in the answer to this question.

***798** rounded to the nearest whole number since the context is number of people.*

5. Using the data from Community and Personal Service Workers in Table 2, use the Balance Method to estimate the whole number of employed persons over 15 in Australia.

801,906 = 8.8% of x
x = 9,112,568

6. Check your answer to question 5. using the statistics for Professional occupation.

1,806,010 = 19.8% of x
x = 9,121,262

7. Were your answers to questions 5. and 6. the same. Explain why or why not.
The answers were quite close with a difference of 8694. Such a small error is probably due to rounding of the percentage values we were given.

8. 36.6% of private dwellings in a region were fully owned and there were 302 0f them, how many dwellings are there in total?

302 = 36.6% of x
x = 825 (rounded to the nearest whole number)

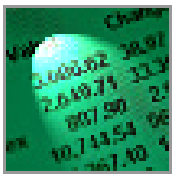
9. If 31.7% of private dwellings in another region were fully owned and there were 340 0f them, how many dwellings are there in total?

340 = 31.7% of x
x = 1073(rounded to the nearest whole number)

Teacher Notes and Solutions

Task 3: Selecting and Getting to Know the Data for Your Area

- Enter the address www.abs.gov.au into the address bar.
- Select 'Census' from the global menu that runs horizontally across the top of the homepage.
- Go to Census Data online in the Quicklinks menu that runs down the left hand side of the page.
- Open the Quick Stats you can enter the name of your locality and hit Search.
- Choose the type of area you are interested in from the drop down list.
- Select View Quick Stats to see a summary of the data that was collected for your area in 2006



1. You will notice that the data about your neighbourhood has been organised into categories.
The first one is *Person Characteristics*.

2. The second and third categories on the list are
Age…and *Selected Characteristics*…

When we comment on statistical information we usually start by focusing on the areas that are obviously the same as well as those that are obviously different.

3. Write three things that you notice about your region that are what you expected.
Answers will vary

4. Write three things that you notice about your region that are not what you expected.
Answers will vary

5. In what way(s) is the selected region similar to the Australian population as a whole? Choose one of these and draw a side by side bar graph to show the similarities.
Answers will vary

6. In what way(s) is the selected region significantly different from the Australian population as a whole? Draw another side by side bar graph that shows one difference.
Answers will vary

7. You know your region very well. What might the reasons be for these similarities and differences?
Answers will vary

8. Write a newspaper report for your local paper that highlights and summarises the important statistics for your region as identified in the 2006 Census.

Glossary
Dwellings: type of building in which people live